# Author Index


Abbotson, M.: *see* Kirk, R., 253
Abbotson, R.: *see* Kirk, R., 253
Abdul-Majeed, S.: *see* Qassem, W., 151
Akay, H.U.: *see* Chen, J., 53
Al-Nashash, H.A.M., ECG data compression using adaptive Fourier coefficients estimation, 62
Ambrosi, D.: *see* de Lazzari, C., 97
Andrews, B.J., Granat, M.H., Heller, B.W., MacMahon, J., Keating, L. and Real, S., Improved harness crutch to reduce upper limb effort in swing-through gait, 15
Andrisano, A.O.: *see* Viceconti, M., 143
Arlt, A.C.: *see* Zangemeister, W.H., 163
Artoli, E., Avanzolini, G., Barbini, P. and Gnudi, G., A four-parameter linear model for analyzing cardiorespiratory data in post-operative cardiac patients, 479
Attenburrow, D.P. and Goss, V.A., The mechanical coupling of lung ventilation to locomotion in the horse, 188
Attfield, S.F., Warren-Forward, M., Wilton, T. and Sambatakakis, A., Measurement of soft tissue imbalance in total knee arthroplasty using electronic instrumentation, 496
August, S.: *see* Weiss, P.I., 323
Avanzolini, G.: *see* Artoli, E 479
Barbini, P.: *see* Artoli, E., 479
Basu, A.: *see* Steele, J.R., 363
Bateman, S.C.: *see* Woodward, B., 278
Bazar, A.R.: *see* Tehrani, F.T., 329
Borsevici, V., Oleinik, W., Mustyatsa, A., Tjuteakin, A. and Silkin, D. Mathematical method for a running spectrum analysis, 301
Brodie, M.R.: *see* Ries, M.D., 292
Brown, I.: *see* Lehmann, E.D., 213
Brummitt, K.: *see* Derbyshire, B., 229
Buckles, D.S., Fyfe, D.A. and Kline, C.H., Computational methods for wide-field reconstruction of transoesphageal echocardiographic images, 29
Busscher, H.J.: *see* van Kooten, T.G., 501
Canilang, E.P.: *see* Sukthankar, S.M., 430
Chandler, S.T. and Trewby, P.N., Is respiratory sinus arrhythmia present in atrial fibrillation? A study using two quantitative methods, 334
Chang, K-C., Tseng, Y.Z., Lin, Y.J., Kuo, T.S. and Chen, H.I., Exponentially tapered T-tube model of systemic arterial system in dogs, 370
Chang, Y.A.: *see* Saidel, G.M., 135
Chen, H.I.: *see* Chang, K-C., 370
Chen, J., Lu, X., Paydar, N., Akay, H.U. and Roberts, W.E., Mechanical simulation of the human mandible with and without an endosseous implant, 53
Cheong, K.C.: *see* Lim, K.O., 521
Cherry, A.D.: *see* Hawley, M.S., 237
Chiang, C-M.J., Jenkins, J.M. and DiCarlo, L.A., Discrimination of ventricular tachycardia from sinus tachycardia by antitachycardia devices: value of median filtering, 508
Chiang, T-H.: *see* Guo, G.X., 453
Chow, Y.W., Turner, I., Kernohan, W.G. and Mollan, R.A.B., Measurement of the forces and movements involved in neonatal hip testing, 181
Cleaton, A.: *see* Kirk, R., 253
Collier, R.J. and Ntui, J.A., *In vivo* measurements of the phase constants of transverse mechanical waves in a human tibia from 100 to 1000 Hz, 379
Cortinez, V.H.,: *see* Laura, P.A., 422
Cudd, P.A.: *see* Hawley, M.S., 237
Currey, J.D.: *see* Zioupos, P., 203
de Jong, Ir. A.B.: *see* Journee, H.L., 487
Dekker, A.: *see* van Kooten, T.G., 501
de Lazzari, C., Ferrari, G., Mimmo, R., Tosti, G. and Ambrosi, D., A desk-top computer model of the circulatory system for heart assistance simulation: effect of a LVAD on energetic relationships inside the left ventricle, 97
Derbyshire, B., Fisher, J., Dowson, D., Hardaker, C. and Brummitt, K., Comparative study of the wear of UHMWPE with zirconia ceramic and stainless steel femoral heads in artificial hip joints, 229
Deutsch, T.: *see* Lehmann, E.D., 193
DiCarlo, L.A.: *see* Chiang, C-M.J., 508
Dietrich, F.: *see* Mittlmeier, T., 75
Dougherty, G., Spectral analysis of laser Doppler signals in real time using digital processing, 35
Dowson, D.: *see* Hailey, J.L., 223
Dowson, D.: *see* Derbyshire, B., 229
Dowson, D.: *see* Jin, Z.M., 398
Doyle, M.: *see* Faris, F., 287
Drinnan, M.J., Murray, A., White, J.F.S., Smithson, A.J., Gibson, G.J. and Griffiths, C.J., Automated measurement of the cyclic activity of respiratory muscles, 472
Duffy, J.S. and Shuter, M., Evaluation of soft-tissue properties under controlled expansion for reconstructive surgical use, 304
Duffy, J.S.: *see* Shuter, M., 24
Ebenezer, D. and Papa, F.F., A recursive digital differentiator for ECG preprocessing, 273
Eckhoff, D.G.: *see* Ries, M.D., 292
Edworthy, J. and Meredith, C., Cognitive psychology and the design of alarm sounds, 526
Elloy, M.: *see* Hailey, J.L., 223
English, M.J.: *see* Wilks, P.A.D., 19
Erasmus, L-P., Pull, O., Kratzmair, M. and Holzl, R., Method and apparatus for pressure-controlled distension of the lower gastrointestinal tract, 339
Ercoli, L.: *see* Laura, P.A., 422
Faris, F., Doyle, M., Wickramasinghe, Y., Houston, R., Rolfe, P. and O'Brien, S., A non-invasive optical technique for intrapartum fetal monitoring: preliminary clinical studies, 287
Ferrari, G.: *see* de Lazzari, C., 97
Finlay, J.B.: *see* Liggins, A.B., 491
Fisher, J.: *see* Hailey, J.L., 223
Fisher, J.: *see* Derbyshire, B., 229
Fisher, J.: *see* Jin, Z.M., 398
Fisher, J.: *see* Leat, M.E., 465
Fyfe, D.A.: *see* Buckles, D.S., 29
Gibson, G.J.: *see* Drinnan, M.J., 472
Giunti, A.: *see* Viceconti, M., 143
Gnudi, G.: *see* Artoli, E., 479
Gomez, M.A.: *see* Ries, M.D., 292
Goodwin, M.J., Mechanical chest stimulation as a physiotherapy aid, 267
Gosling, R.G.: *see* Lehmann, E.D., 213
Goss, V.A.: *see* Attenburrow, D.P., 188
Granat, M.H.: *see* Andrews, B.J., 15
Gregory, A. and Lipczynski, R.T., The three dimensional reconstruction and monitoring of facial surfaces, 249
Griffin, M.: *see* Wevers, H.W., 297
Griffiths, C.J.: *see* Drinnan, M.J., 472
Guo, G.X., Chiang, T-H., Quijano, R.C. and Hwang, N.H.C., The closing velocity of mechanical heart valve leaflets, 453
Guo, H.: *see* Jackson, W.T., 123
Gur, S.: *see* Verbeke, M., 171
Hailey, J.L., Fisher, J., Dowson, D., Sampath, S.A., Johnson, R. and Elloy, M., A tribological study of a series of retrieved Accord knee explants, 223
Hardaker, C.: *see* Derbyshire, B., 229
Hardie, W.R.: *see* Liggins, A.B., 491
Hawley, M.S., Cudd, P.A. and Cherry, A.D., Implementation of a PC-based integrated control system for children, 237
Hefzy, M.S.: *see* Jackson, W.T., 123
Heller, B.W.: *see* Andrews, B.J., 15
Hermanyi, I.: *see* Lehmann, E.D., 193
Hillman, M., Wheelchair wheels for use on sand, 243
Holzl, R.: *see* Erasmus, L-P., 339
Honda, H., Kinbara, K., Tani, J., Ogimura, T., Koiwa, Y. and Takishima, T., Simulation study on heart failure: effects of contractility on cardiac function, 39
Honda, H., Kinbara, K., Tani, J., Ogimura, T., Koiwa, Y., Takagi, T., Kikuchi, J-I., Hoshi, N., Takishima, T., Simulation study on the effect of external vibration on left ventricular function: potential indicator of LV tolerance to the sudden reduction in myocardial contractility, 47
Honda, M.: *see* Nishida, S., 425
Hopkins, K.D.: *see* Lehmann, E.D., 213
Hoshi, N.: *see* Honda, H., 47
Houston, R.: *see* Faris, F., 287
Hulshof, M.: *see* Journee, H.L., 487
Hunt, A.: *see* Kirk, R., 253
Hwang, N.H.C.: *see* Guo, G.X., 453
Iraqi, R.: *see* Verbeke, M., 171
Ison, K., Medical physics and medical engineering in the UK, 5
Jackson, W.T., Hefzy, M.S. and Guo, H., Determination of wrist kinematics using a magnetic tracking device, 123
Jenkins, J.M.: *see* Chiang, C-M.J., 508
Jin, Z.M., Dowson, D. and Fisher, J., A parametric analysis of the contact stress in ultra high molecular weight polyethylene acetabular cups, 398
Job, A.: *see* Steele, J.R., 363
Johnson, R.: *see* Hailey, J.L., 223
Jones, R.L.: *see* Lehmann, E.D , 213
Journee, H.L., Hulshof, M. and de Jong, Ir. A.B., ESTRACE-1: a stethoscope for functional checking of electrostimulators and low-cost body-surface mapping system, 487
Kaneko, T.M., Relationship between the stiffness of the dental implant-bone system and the duration of the implant-tapping rod contact, 310
Keating, L.: *see* Andrews, B.J., 15
Kernohan, W.G.: *see* Chow, Y.W., 181
Kikuchi, J-I.: *see* Honda, H., 47
Kinbara, K.: *see* Honda, H., 39
Kinbara, K.: *see* Honda, H., 47
Kirk, R., Abbotson, M., Abbotson, R., Hunt, A. and Cleaton, A., Computer music in the service of music therapy:

the MIDIGRID and MIDICREATOR systems, 253
Kirkpatrick, C.J.: *see* van Kooten, T.G., 501
Kline, C.H.: *see* Buckles, D.S., 29
Koiwa, Y.: *see* Honda, H., 39
Koiwa, Y.: *see* Honda, H., 47
Kratzmair, M.: *see* Erasmus, L.-P., 339
Kuo, T.S.: *see* Chang, K-C.: 370
Latwesen, A. and Patterson, P.E., Identification of lower arm motions using the EMG signals of shoulder muscles, 113
Laura, P.A., Cortinez, V.H., Ercoli, L. and Rossi, R.E., A simple method for the determination of the fundamental frequency of vibration of bones, 422
Leat, M.E. and Fisher, J., A synthetic leaflet heart valve with improved opening characteristics, 465
Lehman, S.: *see* Zangemeister, W.H., 163
Lehmann, E.D., Hermanyi, I. and Deutsch, T., Retrospective validation of a physiological model of glucose-insulin interaction in type 1 diabetes mellitus, 193
Lehmann, E.D., Hopkins, K.D., Marsden, R.M., Brown, I., Jones, R.L., Turay, R.C., Taylor, M.G. and Gosling, R.G., Aortic compliance measured by non-invasive Doppler ultrasound: application of a personal computer based Mk II system and its repeatability, 213
Lengsfeld, M., Stammberger, U. and Reeh, S., Spatial measurement and transformation of muscular attachments at the lower extremity, 513
Lewis, D.A.: *see* Ries, M.D., 292
Liggins, A.B., Hardie, W.R. and Finlay, J.B., Sterilization of Fuji pressure-sensitive film, 491
Lim, K.O. and Cheong, K.C., Effect of suturing on the mechanical properties of bovine pericardium - implications for cardiac valve bioprosthesis, 521
Lin, S.L.: *see* Young, S.T., 460
Lin, Y.J.: *see* Chang, K-C., 370
Lipczynski, R.T.: *see* Gregory, A., 249
Lipczynski, R.T.: *see* Moran, A.J., 259
Lu, X.: *see* Chen, J., 53
MacLeod, K.: *see* McDonald, F., 384
MacMahon, J.: *see* Andrews, B.J., 15
Malata, C.M.: *see* Shuter, M., 24
Marsden, R.M.: *see* Lehmann, E.D., 213
Mattheck, S.: *see* Mittlmeier, T., 75
McDonald, F., Yettram, A.L. and MacLeod, K., The response of bone to external loading regimens, 384
Meredith, C.: *see* Edworthy, J., 526
Miftakhov, R.N. and Wingate, D.L., Mathematical modelling of the enteric nervous network: 1. cholinergic neuron, 67
Miftakhov, R.N. and Wingate, D.L., Biomechanics of small bowel motility, 406
Miftakhov, R.N. and Wingate, D.L., Modelling of the enteric nervous network: 3. Adrenergic neuron, 445
Mimmo, R.: *see* de Lazzari, C., 97
Mittlmeier, T., Mattheck, C. and Dietrich, F., Effects of mechanical loading on the profile of human femoral diaphyseal geometry, 75
Mollan, R.A.B.: *see* Chow, Y.W., 181
Moran, A.J. and Lipczynski, R.T., Automatic digitization and analysis of moire topograms on a personal computer for clinical use, 259
Mulder, L.J.M.: *see* van Steenis, H.G., 355
Murray, A.: *see* Drinnan, M.J., 472
Mustyatsa, A.: *see* Borsevici, V., 301
Nagamine, T.: *see* Nishida, S., 425
Nakamura, M.: *see* Nishida, S., 425
Nishida, S., Nakamura, M., Sewazono, S., Honda, M., Nagamine, T. and Shibasaki, H., Automatic detection method of P300 waveform in the single sweep records by using neural network, 425
Ntui, J.A.: *see* Collier, R.J., 379
O'Brien, S.: *see* Faris, F., 287
Ogimura, T.: *see* Honda, H., 39
Ogimura, T.: *see* Honda, H., 47
Oleinik, W.: *see* Borsevici, V., 301
Othman, M.O.: *see* Qassem, W., 151
Papa, F.F.: *see* Ebenezer, D., 273
Patterson, P.E.: *see* Latwesen, A., 113
Paydar, N.: *see* Chen, J., 53
Peters, G.: *see* Weiss, P.L., 323
Pull, O.: *see* Erasmus, L-P., 339
Qassem, W., Othman, M.O. and Abdul-Majeed, S., The effects of vertical and horizontal vibrations on the human body, 151
Qian, K-X., Haematological variations in pigs during experimental left ventricular assistance with a pulsatile impeller pump, 349
Quijano, R.C.: *see* Guo, G.X., 453
Real, S.: *see* Andrews, B.J., 15
Reddy, N.P.: *see* Sukthankar, S.M., 430
Reeh, S.: *see* Lengsfeld, M., 513
Ries, M.D., Gomez, M.A., Eckhoff, D.G., Lewis, D.A., Brodie, M.R. and Wiedel, J.D., An *in vitro* study of proximal femoral allograft strains in revision hip arthroplasty, 292
Roberts, W.E.: *see* Chen, J., 53
Rolfe, P.: *see* Faris, F., 287
Ron, S.: *see* Verbeke, M., 171
Rossi, R.E.: *see* Laura, P.A., 422
Ruth, B., Measuring the steady-state value and the dynamics of the skin blood flow using the non-contact laser speckle method, 105
Saidel, G.M., and Chang, Y.A., $CO_2$ control of breathing: Parameter estimation and stability evaluation, 135
Sakuda, M.: *see* Tanaka, E., 316
Sambatakakis, A.: *see* Attfield, S.F., 496
Sampalis, J.: *see* Weiss, P.L., 323
Sampath, S.A.: *see* Hailey, J.L., 223
Schakenraad, J.M.: *see* van Kooten, T.G., 501
Sedman, A.J.: *see* Zioupos, P., 203
Sewazono, S.: *see* Nishida, S., 425
Sharpe, D.T.: *see* Shuter, M., 24
Shibasaki, H.: *see* Nishida, S., 425
Shuter, M.: *see* Duffy, J.S., 304
Shuter, M., Malata, C.M., Duffy, J.S. and Sharpe, D.T., Determination of relative contributions of 'mechanical' and 'biological' creep in tissue expansion using *in vivo* pressure monitoring: a preliminary report, 24
Silkin, D.: *see* Borsevici, V., 301
Simurda, M.: *see* Wevers, H.W., 297
Smithson, A.J.: *see* Drinnan, M.J., 472
Stammberger, U.: *see* Lengsfeld, M., 513
Steele, J.R., Basu, A. and Job, A., A three-dimensional representation of an athletic female knee joint using magnetic resonance imaging, 363
Stephenson, L.: *see* Sukthankar, S.M., 430
Sukthankar, S.M., Reddy, N.P., Canilang, E.P., Stephenson, L. and Thomas, R., Design and development of portable biofeedback systems for use in oral dysphagia rehabilitation, 430
Takagi, T.: *see* Honda, H., 47
Takishima, T.: *see* Honda, H., 39
Takishima, T.: *see* Honda, H., 47
Tanaka, E., Tanne, K. and Sakuda, M., A three-dimensional finite element model of the mandible including the TMJ and its application to stress analysis in the TMJ during clenching, 316
Tani, J.: *see* Honda, H., 39, 47
Tanne, K.: *see* Tanaka, E., 316
Tarrel, J.: *see* Wevers, H.W., 297
Taylor, M.G.: *see* Lehmann, E.D., 213
Tehrani, F.T. and Bazar, A.R., A feedback controller for supplemental oxygen treatment of newborn infants: a simulation study, 329
Thomas, R.: *see* Sukthankar, S.M., 430
Tjuteakin, A.: *see* Borsevici, V., 301
Toni, A.: *see* Viceconti, M., 143
Tosti, G.: *see* de Lazzari, C., 97
Trewby, P.N.: *see* Chandler, S.T., 334
Tseng, Y.Z.: *see* Chang, K-C., 370
Tulen, J.H.M.: *see* van Steenis, H.G., 355
Turay, R.C.: *see* Lehmann, E.D., 213
Turner, I.: *see* Chow, Y.W., 181
Vaidya, R. and Wilkins, E., Use of charged membranes to control interference by body chemicals in a glucose biosensor, 416
van Kooten, T.G., Schakenraad, J.M., van der Mei, H.C., Dekker, A., Kirkpatrick, C.J. and Busscher, H.J., Fluid shear induced endothelial cell detachment from glass-influence of adhesion time and shear stress, 501
van Steenis, H.G., Tulen, J.H.M. and Mulder, L.J.M., Heart rate variability spectra based on non-equidistant sampling: the spectrum of counts and the instantaneous heart rate spectrum, 355
van der Mei, H.C.: *see* van Kooten, T.G., 501
Verbeke, M., Gur, S., Ron, S. and Iraqi, R., Manual or automatic nulling DC offset for physiological DC amplifier, 171
Viceconti, M., Andrisano, A.O., Toni, A. and Giunti, A., Automatic fracture reduction with a computer-controlled external fixator, 143
Warren-Forward, M.: *see* Attfield, S.F., 496
Weiss, P.L., August, S., Peters, G. and Sampalis, J., Using the Exos Handmaster to measure digital range of motion: reliability and validity, 323
Wevers, H.W., Simurda, M., Griffin, M. and Tarrel, J., Improved fit by asymmetric tibial prosthesis for total knee arthroplasty, 297
White, J.E.S.: *see* Drinnan, M.J., 472
Wickramasinghe, Y.: *see* Faris, F., 287
Wiedel, J.D.: *see* Ries, M.D., 292
Wilkins, E.: *see* Vaidya, R., 416
Wilks, P.A.D. and English, M.J., Accurate segmentation of respiration waveforms from infants enabling identification and classification of irregular breathing patterns, 19
Wilton, T.: *see* Attfield, S.F., 496
Wingate, D.L.: *see* Miftakhov, R.N., 67, 406, 445
Woodford, F.P., A scientist's view of bioengineering, 91
Woodward, B., and Bateman, S.C., Diver monitoring by ultrasonic digital data telemetry, 278
Yettram, A.L.: *see* McDonald, F., 384
Young, S.T. and Lin, S.L., A possible relation between pressure loading and thickened leaflets of the aortic valve: a model simulation, 460
Zangemeister, W.H., Arlt, A.C. and Lehman, S., Sensitivity functions of a human head movement model, 163
Zioupos, P., Currey, J.D. and Sedman, A.J., An examination of the micromechanics of failure of bone and antler by acoustic emission tests and Laser Scanning Confocal microscopy, 203

# Subject Index


acoustic emission
  bone, damage, microcracking, laser scanning confocal microscopy, 203
adaptive filters
  electrocardiography, ECG, Fourier series, Holter monitoring, 62
adhesion time
  venous endothelial cells, cell seeding, parallel-plate flow chamber, shear stress, 501
adrenergic neuron
  synapse, mathematical modelling, 445
alarms
  cognitive psychology, warning design, 526
allograft
  biomechanics, hip, revision, femur, 292
aortic compliance
  pulse wave velocity, blood pressure, Doppler ultrasound, 213
aortic value
  coronary perfusion, haemodynamics, pressure loading, thickening progress, 460
arterial input impedence
  exponentially tapered transmission line, vascular non-conformity, asymmetric T-tube model, 370
asymmetric
  prosthesis, tibia, template 297
asymmetric T-tube model
  exponentially tapered transmission line, vascular non-conformity, arterial input impedence, 370
atrial fibrillation
  sinus arrhythmia, computer analysis, 334
automatic detection
  event-related potential, single sweep records, neural network, p300, 425
bioengineers,
  clinical scientists, careers, NHS reforms, fragmentation of services, 91
biofeedback
  rehabilitation, dysphagia, portable, 430
biomechanics
  hip, revision, allograft, femur, 292
biosensor
  glucose, membrane, interference, 416
blood flow
  skin, dynamics, non-contact, laser speckle, 105
blood pressure
  aortic compliance, pulse wave velocity, Doppler ultrasound, 213
body surface potential mapping
  transcutaneous electrical stimulation, neuromodulation, spinal cord stimulation, 487
bone
  damage, microcracking, acoustic emission, laser scanning confocal microscopy, 203
  remodelling, external loading, 384
bone remodelling
  finite element analysis, computer-aided optimization, loading history, 75
bones
  transverse vibrations, fundamental frequency, finite element, optimized Rayleigh-Ritz method, 422
bovine pericardium
  suturing, mechanical properties, 521
breath segmentation
  sudden infant death syndrome, respiration monitor, 19
cardiac mechanical efficiency
  cardiovascular modelling, pressure-volume relationship, left ventricle assist device, pressure volume area, 97
cardiorespiratory data
  linear models, postoperative cardiac patients, intensive care unit, 479
cardiovascular modelling
  pressure-volume relationship, left ventricle assist device, pressure volume area, cardiac mechanical efficiency, 97
cardiovascular time series
  heart rate variability, non-equidistant sampling, signal processing, spectral analysis, 355
careers
  clinical scientists, bioengineers, NHS reforms, fragmentation of services, 91
careers
carpal bones
  wrist joint, kinematics, screw displacement axis, Euler angles, 123
cell seeding
  venous endothelial cells, adhesion time, parallel-plate flow chamber, shear stress, 501
chest
  physiotherapy, mechanical percussion, lungs, vibration, 267
children
  physical disability, integrated control systems, computers, 237
cholinergic neuron
  electrochemical coupling, mathematical modelling, 67
clinical scientists
  bioengineers, careers, NHS reforms, fragmentation of services, 91
$CO_2$ rebreathing
  respiratory control, mathematical model, nonlinear estimation, explicit stability, 135
cognitive psychology
  alarms, warning design, 526
colon probe
  gastrointestinal psychophysics, colonic distension, gastrointestinal diagnostic, functional bowel disease, 339
colonic distension
  gastrointestinal psychophysics, colon probe, gastrointestinal diagnostic, functional bowel diseases, 339
computer analysis
  sinus arrhythmia, atrial fibrillation, 334
  electromyogram, respiration, 472
computer music
  transducers, music therapy, 253
computer simulation
  respiratory system, oxygen therapy, newborn infant, 329
  validation, insulin dosage adjustment, diabetes mellitus, 193
computer-aided optimization
  bone remodelling, finite element analysis, loading history, 75
computer-aided optimization
computers
  physical disability, children, integrated control systems, 237
contact stress
  hip prosthesis, 398
contact time
  dental implant, stiffness, interface, 310
contractility
  heart, pump function, mathematical model, 39
  heart, vibration, mathematical model, 47
control circuits
  sinus arrythmia, stream of events, Lebesque-Stilties integral, Dirack's 'delta-function', 301
coronary perfusion
  aortic valve, haemodynamics, pressure loading, thickening progress, 460
couple
  lung, ventilation, locomotion, mechanics, 188
crutches
  swing–through gait, paraplegic gait, oxygen cost, 15
cylindrical measuring frame
  muscle coordinates, data transformation, 513
damage
  bone, microcracking, acoustic emission, laser scanning confocal microscopy, 203
data transformation
  muscle coordinates, cylindrical measuring frame, 513
DC amplifier
  offset voltage, physiological signals, slow cortical evoked potential, 171
DDH
  neonatal hip testing, measurement, safety, 181
dental implant
  human mandible, mechanical environment, 53
  stiffness, contact time, interface, 310
dental implant
diabetes mellitus
  validation, insulin dosage adjustment, computer simulation, 193
digital data transmission
  diving, under-water acoustics, ultrasonic telemetry, physiological monitoring, 278
digital range of motion
  goniometry, functional hand assessment, worker's compensation, 323
digital signal processing
  ECG recursive digital differentiator, 273
digital signal processing
  laser Doppler flowmetry, spectral analysis, 35
Dirack's 'delta-function'
  sinus arrythmia, control circuits, stream of events, Lebesque-Stilties Integral, 301
diving
  under-water acoustics, ultrasonic telemetry, digital data transmission, physiological monitoring, 278
Doppler ultrasound
  aortic compliance, pulse wave velocity, blood pressure, 213
dynamics
  blood flow, skin, non-contact, laser speckle, 105
dysphagia
  rehabilitation, biofeedback, portable, 430
ECG
  electrocardiography, adaptive filters, Fourier series, Holter monitoring, 62
ECG recursive digital differentiator
  digital signal precessing, 273
echocardiography

image processing, medical imaging, tomography, transoesophageal, 29
electrocardiography
ECG, adaptive filters, Fourier series, Holter monitoring, 62
electrochemical coupling
cholinergic neuron, mathematical modelling, 67
electrochemical coupling
electromyogram
respiration, computer analysis, 472
EMG
myoelectric control, 113
Euler angles
wrist joint, carpal bones, kinematics, screw displacement axis, 123
event-related potential
single sweep records, automatic detection, neural network, p300, 425
explicit stability
respiratory control, mathematical model, nonlinear estimation, $CO_2$ rebreathing, 135
exponentially tapered transmission line
vascular non-conformity, asymmetric T-tube model, arterial input impedence, 370
external fixator
kinematic analysis, robotics, fracture reduction, 143
external loading
bone, remodelling, 384
femur
biomechanics, hip, revision, allograft, 292
fetal monitoring
near infra-red, spectroscopy, 287
finite element
bones, transverse vibrations, fundamental frequency, optimized Rayleigh-Ritz method, 422
finite element analysis
bone remodelling, computer-aided optimization, loading history, 75
knee joint, magnetic resonance imaging, modelling, 363
finite element method (FEM)
three-dimensional model, stress distribution, temporomandibular joint (TMJ), 316
Fourier series
electrocardiography, ECG, adaptive filters, Holter monitoring, 62
fracture reduction
kinematic analysis, robotics, external fixator, 143
fragmentation of services
clinical scientists, bioengineers, careers, NHS reforms, 91
Fuji film
pressure, sterilization, joints, 491
functional bowel diseases
gastrointestinal psychophysics, colonic distension, colon probe, gastrointestinal diagnostic, 339
functional hand assessment
goniometry, digital range of motion, worker's compensation, 323
fundamental frequency
bones, transverse vibrations, finite element, optimized Rayleigh-Ritz method, 422
gain
model, resonance, vertical, vibrations, 151
gastrointestinal diagnostic
gastrointestinal psychophysics, colonic distension, colon probe, functional bowel diseases, 339
gastrointestinal psychophysics
colonic distension, colon probe, gastrointestinal diagnostic, functional bowel diseases, 339
glucose
biosensor, membrane, interference, 416
goniometry
digital range of motion, functional hand assessment, worker's compensation, 323
haematological variations
pulsatile impeller pump, left ventricular assistance, pigs, 349
haemodynamics
aortic valve, coronary perfusion, pressure loading, thickening progress, 460
head movement
model optimization, model simulation, sensitivity functions, theory of optimality, 163
heart
contractility, pump function, mathematical model, 39
vibration, contractility, mathematical model, 47
heart rate variability
cardiovascular time series, non-equidistant sampling, signal processing, spectral analysis, 355
heart valve
polyurethane leaflet, leaflet opening, 465
hip
biomechanics, revision, allograft, femur, 292
hip prosthesis
wear, UHNWPE, 229,
contact stress, 398
holter monitoring
electrocardiography, ECG, adaptive filters, Fourier series, 62
human mandible
dental implant, mechanical environment, 53
image processing
echocardiography, medical imaging, tomography, transoesophageal, 29
imbalance
soft tissues, knee arthoplasty, measurement, 496
insulin dosage adjustment
validation, diabetes mellitus, computer simulation, 193
integrated control systems
physical disability, children, computers, 237
intensive care unit
linear models, cardiorespiratory data, postoperative cardiac patients, 479
interface
dental implant, stiffness, contact time, 310
interference
glucose, biosensor, membrane, 416
joints
Fuji film, pressure, sterlization, 491
kinematic analysis
robotics, external fixator, fracture reduction, 143
kinematics
wrist joint, carpal bones, screw displacement axis, Euler angles, 123
knee arthoplasty
soft tissues, imbalance, measurement, 496
knee joint
magnetic resonance imaging, modelling, finite element analysis, 363
knee prostheses
tribology, retrieval, 223
laser Doppler flowmetry
spectral analysis, digital signal processing, 35
laser scanning confocal microscopy
bone, damage, microcracking, acoustic emission, 203
laser speckle
blood flow, skin, dynamics, non-contact, 105
laser sweeping technique
mechanical heart valve, leaflet closing velocity, mock flow loop testing, valve housing compliance, 453
leaflet closing velocity
mechanical heart valve, mock flow loop testing, laser sweeping technique, valve housing compliance, 453
leaflet opening
heart valve, polyurethane leaflet, 465
Lebesque-Stilties integral
sinus arrythmia, control circuits, stream of events, Dirack's 'delta-function', 301
left ventricle assist device
cardiovascular modelling, pressure-volume relationship, pressure volume area, cardiac mechanical efficiency, 97
left ventricular assistance
pulsatile impeller pump, haematological variations, pigs, 349
linear models
cardiorespiratory data, postoperative cardiac patients, intensive care unit, 479
loading history
bone remodelling, finite element analysis, computer-aided optimization, 75
locomotion
lung, ventilation, mechanics, couple, 188
lung
ventilation, locomotion, mechanics, couple, 188
lungs
physiotherapy, mechanical percussion, chest, vibration, 267
magnetic resonance imaging
knee joint, modelling, finite element analysis, 363
management
medical physics, medical engineering, survey, 5
mathematical model
heart, contractility; pump function, 39
heart, vibration, contractility, 47
respiratory control, nonlinear estimation, explicit stability, $CO_2$ rebreathing, 135
small bowel, motility, 406
mathematical modelling
cholinergic neuron, electrochemical coupling, 67
adrenergic neuron, synapse, 445
measurement
DDH, neonatal hip testing, safety, 181
soft tissues, imbalance, knee arthoplasty, 496
mechanical environment
dental implant, human mandible, 53
mechanical heart valve
leaflet closing velocity, mock flow loop testing, laser sweeping technique, valve housing compliance, 453
mechanical properties
suturing, bovine pericardium, 521
mechanical/biological creep
tissue deformation, pressure, 24
mechanics
, ventilation, locomotion, couple, 188
median filtering
sudden onset, ventricular tachycardia, 508
medical engineering
management, medical physics, survey, 5
medical imaging

echocardiography, image processing, tomography, transoesophageal, 29
medical physics
management, medical engineering, survey, 5
membrane
glucose, biosensor, interference, 416
mechanical percussion
physiotherapy, chest, lungs, vibration, 267
microcracking
bone, damage, acoustic emission, laser scanning confocal microscopy, 203
mobility
sand, wheelchairs, 243
mock flow loop testing
mechanical heart valve, leaflet closing velocity, laser sweeping technique, valve housing compliance, 453
model
gain, resonance, vertical, vibrations, 151
model optimization
head movement, model simulation, sensitivity functions, theory of optimality, 163
model simulation
head movement, model optimization, sensitivity functions, theory of optimality, 63
modelling
knee joint, magnetic resonance imaging, finite element analysis, 363
moiré analysis
scoliosis, moiré topography, 259
moiré topography
scoliosis, moiré analysis, 259
motility
small bowel, mathematical model, 406
muscle coordinates
cylindrical measuring frame, data transformation, 513
music therapy
transducers, computer music, 253
myoelectric control
EMG, 113
near infra-red
fetal monitoring, spectroscopy, 287
neonatal hip testing
DDH, measurement, safety, 181
neural network
event-related potential, single sweep records, automatic detection, p300, 425
neuromodulation
transcutaneous electrical stimulation, spinal cord stimulation, body surface potential mapping, 487
newborn infant
respiratory system, oxygen therapy, computer simulation, 329
NHS reforms
clinical scientists, bioengineers, careers, fragmentation of services, 91
non-contact
blood flow, skin, dynamics, laser speckle, 105
non-equidistant sampling
cardiovascular time series, heart rate variability, signal processing, spectral analysis, 355
nonlinear estimation
respiratory control, mathematical model, explicit stability, $CO_2$ rebreathing, 135
offset voltage
DC amplifier, physiological signals, slow cortical evoked potential, 171
offset voltage
optimized Rayleigh-Ritz method
bones, transverse vibrations, fundamental frequency, finite element, 422
oxygen cost
swing-through gait, paraplegic gait, crutches, 15
oxygen therapy
respiratory system, newborn infant, computer simulation, 329
p300
event-related potential, single sweep records, automatic detection, neural network, 425
parallel-plate flow chamber
venous endothelial cells, cell seeding, adhesion time, shear stress, 501
paraplegic gait
swing-through gait, crutches, oxygen cost, 15
phase constants
transverse mechanical waves, tibia, 379
physical disability
children, integrated control systems, computers, 237
physiological monitoring
diving, under-water acoustics, ultrasonic telemetry, digital data transmission, 278
physiological signals
DC amplifier, offset voltage, slow cortical evoked potential, 171
physiotherapy
mechanical percussion, chest, lungs, vibration, 267
pigs
pulsatile impeller pump, haematological variations, left ventricular assistance, 349
polyurethane leaflet
heart valve, leaflet opening, 465
portable
rehabilitation, biofeedback, dysphagia, 430
postoperative cardiac patients
linear models, cardiorespiratory data, intensive care unit, 479
postoperative cardiac patients
pressure
tissue deformation, mechanical/biological creep, 24
Fuji film, sterilization, joints, 491
pressure loading
aortic valve, coronary perfusion, haemodynamics, thickening progress, 460
pressure volume area
cardiovascular modelling, pressure-volume relationship, left ventricle assist device, cardiac mechanical efficiency, 97
pressure-volume relationship
cardiovascular modelling, left ventricle assist device, pressure volume area, cardiac mechanical efficiency, 97
prosthesis
tibia, template, asymmetric, 297
pulsatile impeller pump
haematological variations, left ventricular assistance, pigs, 349
pulse wave velocity
aortic compliance, blood pressure, Doppler ultrasound, 213
pump function
heart, contractility, mathematical model, 39
reconstruction of facial surfaces
structured light scanning, 249
reconstructive surgery
tissue expansion, tissue mechanics, viscoelastic model of tissue, 304
rehabilitation
biofeedback, dysphagia, portable, 430
remodelling
bone, external loading, 384
resonance
gain, model, vertical, vibrations, 151
respiration
electromyogram, computer analysis, 472
respiration monitor
sudden infant death syndrome, breath segmentation, 19
respiratory control
mathematical model, nonlinear estimation, explicit stability, $CO_2$ rebreathing, 135
respiratory system
oxygen therapy, newborn infant, computer simulation, 329
retrieval
tribology, knee prostheses, 223
revision
biomechanics, hip, allograft, femur, 292
robotics
kinematic analysis, external fixator, fracture reduction, 143
safety
DDH, neonatal hip testing, measurement, 181
sand
mobility, wheelchairs, 243
scoliosis
moiré topography, moiré analysis, 259
screw displacement axis
wrist joint, carpal bones, kinematics, Euler angles, 123
sensitivity functions
head movement, model optimization, model simulation, theory of optimality, 163
shear stress
venous endothelial cells, cell seeding, adhesion time, parallel-plate flow chamber, 501
signal processing
cardiovascular time series, heart rate variability, non-equidistant sampling, spectral analysis, 355
single sweep records
event-related potential, automatic detection, neural network, p300, 425
sinus arrhythmia
atrial fibrillation, computer analysis, 334
sinus arrythmia
control circuits, stream of events, Lebesque-Stilties integral, Dirack's 'delta-function', 301
skin
blood flow, dynamics, non-contact, laser speckle, 105
slows cortical evoked potential
DC amplifier, offset voltage, physiological signals, 171
small bowel
motility, mathematical model, 406
soft tissues
imbalance, knee arthoplasty, measurement, 496
spectral analysis
laser Doppler flowmetry, digital signal processing, 35
cardiovascular time series, heart rate variability, non-equidistant sampling, signal processing, 355
spectroscopy
fetal monitoring, near infra-red, 287
spinal cord stimulation
transcutaneous electrical stimulation, neuromodulation, body surface potential mapping, 487
sterilization
Fuji film, pressure, joints, 491
stiffness
dental implant, contact time, interface, 310
stream of events
sinus arrythmia, control circuits,

Lebesque-Stilties integral, Dirack's 'delta-function', 301
stress distribution
three-dimensional model, finite element method (FEM), temporomandibular joint (TMJ), 316
structured light scanning
reconstruction of facial surfaces, 249
sudden infant death syndrome
respiration monitor, breath segmentation, 19
sudden onset
median filtering, ventricular tachycardia, 508
survey
management, medical physics, medical engineering, 5
suturing
mechanical properties, bovine pericardium, 521
swing-through gait
paraplegic gait, crutches, oxygen cost, 15
synapse
adrenergic neuron, mathematical modelling, 445
template
prosthesis, tibia, asymmetric, 297
temporomandibular joint (TMJ)
three-dimensional model, finite element method (FEM), stress distribution, 316
theory of optimality
head movement, model optimization, model simulation, sensitivity functions, 163
thickening progress
aortic valve, coronary perfusion, haemodynamics, pressure loading, 460
three-dimensional model
finite element method (FEM), stress distribution, temporomandibular joint (TMJ), 316
tibia
prosthesis, template, asymmetric, 297
phase constants, transverse mechanical waves, 379
tissue deformation
pressure, mechanical/biological creep, 24
tissue expansion
reconstructive surgery, tissue mechanics, viscoelastic model of tissue, 304
tissue mechanics
reconstructive surgery, tissue expansion, viscoelastic model of tissue, 304
tomography
echocardiography, image processing, medical imaging, transoesophageal, 29
transcutaneous electrical stimulation
neuromodulation, spinal cord stimulation, body surface potential mapping, 487
transducers
music therapy, computer music, 253
transoesophageal
echocardiography, image processing, medical imaging, tomography, 29
transverse mechanical waves
phase constants, tibia, 379
transverse vibrations
bones, fundamental frequency, finite element, optimized Rayleigh-Ritz method, 422
tribology
retrieval, knee prostheses, 223
UHNWPE
wear, hip prosthesis, 229
ultrasonic telemetry
diving, under-water acoustics, digital data transmission, physiological monitoring, 278
under-water acoustics
diving, ultrasonic telemetry, digital data transmission, physiological monitoring, 278
validation
insulin dosage adjustment, diabetes mellitus, computer simulation, 193
valve housing compliance
mechanical heart valve, leaflet closing velocity, mock flow loop testing, laser sweeping technique, 453
vascular non-conformity
exponentially tapered transmission line, asymmetric T-tube model, arterial input impedence, 370
venous endothelial cells
cell seeding, adhesion time, parallel-plate flow chamber, shear stress, 501
ventilation
lung, locomotion, mechanics, couple, 188
ventricular tachycardia
sudden onset, median filtering, 508
vertical
gain, model, resonance, vibrations, 151
vibration
heart, contractility, mathematical model, 47
physiotherapy, mechanical percussion, chest, lungs, 267
vibrations
gain, model, resonance, vertical, 151
viscoelastic model of tissue
reconstructive surgery, tissue expansion, tissue mechanics, 304
warning design
alarms, cognitive psychology, 526
wear
UHNWPE, hip prosthesis, 229
wheelchairs
mobility, sand, 243
worker's compensation
goniometry, digital range of motion, functional hand assissment, 323
wrist joint
carpal bones, kinematics, screw displacement axis, Euler angles, 123